

auxiliary line **81** by the auxiliary line interval  $S$ , which corresponds to the value obtained by subtracting the overlap amount  $R$  from the work width  $W1$  or the value obtained by adding the work interval  $D$  to the work width  $W1$ . The total number of the first reference auxiliary lines **81** and the first adjacent auxiliary lines **82** to be created inside of a predetermined side of the farm field peripheral edge corresponds to the value obtained by rounding up the decimal spaces of the headland width  $L$  divided by the auxiliary line interval  $S$ . The travel control unit **4a** causes the tractor **1** to autonomously travel along at least a part of the first reference auxiliary lines **81** and the first adjacent auxiliary lines **82**.

[0093] Accordingly, by creating the first auxiliary lines with reference to the farm field peripheral edge and causing the tractor **1** to autonomously travel along the first auxiliary lines, it is possible to prevent remaining work from occurring in the headland area.

[0094] Further, the autonomous travel system **100** of the present embodiment includes the farm field acquisition unit **34**, the reference auxiliary line creation unit **36**, the adjacent auxiliary line creation unit **37**, and the travel control unit **4a**. The farm field acquisition unit **34** acquires information of a farm field including a work area, in which a travel path for the tractor **1** on which the work machine **3** is mounted to autonomously travel to perform work is set, and a headland area, which is formed between the work area and the farm field peripheral edge. The reference auxiliary line creation unit **36** creates the second reference auxiliary line **91** in the headland area at a position that is distant outward from the work area peripheral edge by the second reference interval  $T2$ , which corresponds to the value obtained by subtracting the overlap amount  $R$  from  $1/2$  of the work width  $W1$  or the value obtained by adding the work interval  $D$  to  $1/2$  of the work width  $W1$ . The adjacent auxiliary line creation unit **37** creates a second adjacent auxiliary line **92** at a position that is distant outward from the second reference auxiliary line **91** by the auxiliary line interval  $S$ , which corresponds to the value obtained by subtracting the overlap amount  $R$  from the work width  $W1$  or the value obtained by adding the work interval  $D$  to the work width  $W1$ . The total number of the second reference auxiliary lines **91** and the second adjacent auxiliary lines **92** to be created outside of a predetermined side of the work area peripheral edge corresponds to the value obtained by rounding down the decimal places of the headland width  $L$  divided by the auxiliary line interval  $S$  or the value obtained by subtracting  $1$  from that value. The travel control unit **4a** causes the tractor **1** to autonomously travel along at least a part of the second reference auxiliary lines **91** and the second adjacent auxiliary lines **92**.

[0095] Accordingly, by creating the second auxiliary lines with reference to the work area peripheral edge and causing the tractor **1** to autonomously travel along the auxiliary lines, it is possible to keep a constant work pitch in the headland area.

[0096] Further, in the autonomous travel system **100** of the present embodiment, the reference auxiliary line creation unit **36** is capable of creating the first reference auxiliary line **81** and is capable of creating the second reference auxiliary line **91** as well. The adjacent auxiliary line creation unit **37** is capable of creating the first adjacent auxiliary line **82** and is capable of creating the second adjacent auxiliary line **92** as well. Further, the autonomous travel system **100** further includes the auxiliary line selection unit **38** that selects the first reference auxiliary line **81** and first adjacent auxiliary

lines **82** or selects the second reference auxiliary line **91** and second adjacent auxiliary lines **92**. The travel control unit **4a** causes the tractor **1** to autonomously travel along at least a part of the auxiliary lines selected by the auxiliary line selection unit **38**.

[0097] Accordingly, it is possible to make the tractor **1** autonomously travel in the headland area, based on either first auxiliary lines with reference to the farm field peripheral edge or second auxiliary lines with reference to the work area peripheral edge.

[0098] Further, in the autonomous travel system **100** of the present embodiment, it is preferable that, in a case where the interval  $X$  between the second adjacent auxiliary line **92** and the farm field peripheral edge is narrower than  $1/2$  of the work width  $W1$  or  $1/2$  of the work machine width  $W2$ , the adjacent auxiliary line creation unit **37** does not create the second adjacent auxiliary line **92** or delete the second adjacent auxiliary line **92** after creation.

[0099] Accordingly, it is possible to prevent a path on which the work machine **3** makes contact with the farm field peripheral edge or a path on which the work is performed outside the farm field from being created.

[0100] Further, the autonomous travel system **100** of the present embodiment includes the selection processing unit **39** that performs the process (S303) of allowing the user to select in which of the work area and the headland area the work is to be performed and performs the process (S306) of allowing the user to select whether the work in the headland area is to be performed or the work is to be ended. In a case where it is determined that the user has selected the work in the headland area, the travel control unit **4a** causes the tractor **1** to autonomously travel along at least a part of the auxiliary lines created by the reference auxiliary line creation unit **36** and the adjacent auxiliary line creation unit **37**.

[0101] Accordingly, it is possible for the user to make the tractor **1** autonomously travel in the headland area by performing a simple operation.

[0102] Although preferred embodiments of the present invention have been described above, the above-described configurations can be modified as described below, for example.

[0103] Although the wireless communication terminal **46** of the above-described embodiments has a function of creating both first auxiliary lines and second auxiliary lines, such a configuration having a function of creating either first auxiliary lines or second auxiliary lines is also possible.

[0104] In the above-described embodiment, the work in the headland area is performed using either first auxiliary lines or second auxiliary lines. Alternatively, it is also possible to make the work in the headland area performed by use of an auxiliary line created in another method (for example, an auxiliary line drawn equally distant from the farm field peripheral edge and the work area peripheral edge). Therefore, it is possible to make the wireless communication terminal **46** perform the process of each step illustrated in FIG. **11** by use of various auxiliary lines for a headland. Further, it is also possible that the selection processing unit **39** performs the process of only one of Step S303 and S306.

#### DESCRIPTION OF REFERENCE NUMERALS

[0105] **1** tractor (work vehicle)

[0106] **34** farm field acquisition unit

[0107] **35** travel path creation unit